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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/662,853	09/15/2003	Nelson A. Kelly	GP-303074	2134
7590	12/08/2004			
General Motors Corporation -- Legal Staff Kathryn A. Marra Mail Code 482-C23-B21 P.O. Box 300 Detroit, MI 48265-3000			EXAMINER VALENTINE, DONALD R	
			ART UNIT 1742	PAPER NUMBER

DATE MAILED: 12/08/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)
	10/662,853	KELLY ET AL.
	Examiner	Art Unit
	Donald R. Valentine	1742

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

**A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM
 THE MAILING DATE OF THIS COMMUNICATION.**

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on ____.
- 2a) This action is **FINAL**. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 14-37 is/are pending in the application.
- 4a) Of the above claim(s) 14-19 is/are withdrawn from consideration.
- 5) Claim(s) ____ is/are allowed.
- 6) Claim(s) 20,21,23,25-32,36 and 37 is/are rejected.
- 7) Claim(s) 22,24 and 33-35 is/are objected to.
- 8) Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on ____ is/are: a) accepted or b) objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. ____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) Notice of References Cited (PTO-892)
- 2) Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
 Paper No(s)/Mail Date 06/02/04.
- 4) Interview Summary (PTO-413)
 Paper No(s)/Mail Date. ____ .
- 5) Notice of Informal Patent Application (PTO-152)
- 6) Other: ____ .

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

3. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

4. Claims 20-21 and 23, 25-32, 36-37 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ayers in view of Williams et al.

Ayers shows a container housing a photoelectrode spaced apart from a counterelectrode and an electrolyte solution in contact with each of them. A semiconductor layer of indium and tin oxides (col. 7, lines 49-51) is shown. The counterelectrode is an electrically conductive layer (metal?). The solution is water and a solute of a base, (col. 7-8 lines 60-68 through lines 1-25, respectively, and there is an electrolytically conductive path external to the solution as is shown in the drawing and (col. 5, lines 1-8).

As for claims 21, 24, 25-32 and 36-37, method limitations are not given weight when determining the patentability of apparatus claims.

Ayers does not show the semiconductor layer coated with the indium tin oxide with a thickness greater than 3000 Angstroms.

Williams et al show the photoelectrode spaced apart from a counterelectrode and in contact with an electrolytic solution and describes the thickness of the semiconductor layer which may range from 500 to 5000 angstroms (col. 6, lines 10-20). The thickness appears to be dependant upon a desired transparency of the layer on the element and controls the inactivity of the element.

It would be considered within the skill of the art to utilize the teachings of Williams et al to determine an appropriate thickness of a semiconductor layer in the Ayers reference because thickness of the layer is taught by Williams et al to enable electrode inactivity, a feature that appears to be a characteristic of the light activated electrode of Ayers.

Election/Restrictions

5. Claims 14-19 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b), as being drawn to a nonelected invention, there being no allowable generic or linking claim. Applicant timely traversed the restriction (election) requirement in the reply filed on 10/7/04.

Allowable Subject Matter

6. Claims 22, 24, 33-35 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

7. The following is a statement of reasons for the indication of allowable subject matter: The references of record do not show or suggest a photochemical device which comprising in order an electrically conductive substrate comprising ss/Ag/ZnO and a semiconductor comprising n-I-p; wherein a n-layer faces said ZnO and a ITO layer overlies a p-layer.

Conclusion

8. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Appleby shows a photocell device for evolving hydrogen and oxygen from water.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Donald R. Valentine whose telephone number is 571-272-1250. The examiner can normally be reached on Monday-Friday 9:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Roy King can be reached on 571-272-1244. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).


Donald R. Valentine
Primary Examiner
Art Unit 1742

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December 2, 2004